Note to a Paper on the Error of a received Principle of Analysis.
By WILLIAM R. HAMILTON, &c.

Read April 18, 1831.

The Royal Irish Academy having done me the honour to publish, in the First Part of the Sixteenth Volume of their Transactions, a short Paper, in which I brought forward a certain exponential function as an example of the Error of a received Principle respecting Developments, I am desirous to mention that I have since seen (within the last few days) an earlier Memoir by a profound French Mathematician, in which the same function is employed to prove the fallacy of another usual principle. In the French Memoir, (tom. v. of the Royal Academy of Sciences, at page 13, of the History of the Academy,) the exponential $\left(e^{-\frac{1}{x^2}}\right)$ is given by M. Cauchy, as an example of the vanishing of a function and of all its differential coefficients, for a particular value of the variable (x), without the function vanishing for other values of the variable. In my Paper the same exponential is given as an example of a function, which vanishes with its variable, and yet cannot be represented by any development according to powers of that variable, with constant positive exponents, integer or fractional. There is therefore a difference between the purposes for which this function has been em-

ployed in the two Memoirs, although there is also a sufficient resemblance to induce me to wish, that at the time of publishing my Paper, I had been acquainted with the earlier remarks of M. CAUCHY, in order to have noticed their existence.

OBSERVATORY,
April 16, 1831.